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EXAMINER

CIESLEWICZ, ANETA B

ART UNIT PAPER NUMBER

2814

DATE MAILED: 06/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

DETAILED ACTION

Claim Objections

1. Claim 9 is objected to because of the following informalities: on line 4 of claim 9, it is suggested that the phrase “the device comprising” be changed to “and the electrochemical transistor device further comprises”. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 12 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In particular, on line 5 of claim 12, the limitation “optionally substituted” is not clear?

Claim Rejections - 35 USC § 102

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claim 1-3, 7, 8, 10, 11 and 16 are rejected under 35 U.S.C. 102(e) as being anticipated by Madden et al., US 6,207,034 B1.

Re claim 1, Madden et al. in Figure 1 disclose a supported or self-supporting electrochemical transistor device comprising: a source contact (12), a drain contact (14), at least one gate electrode (19), an electrochemically active element (conducting polymer) arranged between and in direct electrical contact with the source and drain contacts, wherein electrochemically active element comprises a transistor channel and is of a material comprising an organic material having the ability of electrochemically altering its conductivity through change of redox state thereof (e.g. column 1, lines 22-32), and a solidified electrolyte (18) in direct electrical contact with the electrochemically active element and the at least one gate electrode and interposed between them in such a way that the electron flow between the electrochemically active element and the at least one gate electrode is prevented and the flow of electrons between source contact and drain contact is controllable by means of a voltage applied to the at least one gate electrode (e.g. column 1, lines 22-45).

Re claim 2, in the electrochemical transistor disclosed by Madden et al., the source and drain contacts, the gate electrode and the electrochemically active element are arranged in one common plane (e.g. Figure 1).

Re claim 3, in the electrochemical transistor disclosed by Madden et al., a continuous layer of a solidified electrolyte covers the electrochemically active element and covers at least partially the at least one gate electrode.

Re claim 7, since the electrochemical transistor device disclosed by Madden et al. includes all the limitations claimed, then the transistor channel inherently retains its redox state upon removal of the gate voltage.

Re claim 8, since the electrochemical transistor device disclosed by Madden et al. includes all the limitations claimed, then the transistor channel inherently spontaneously returns to its initial redox state upon removal of the gate voltage.

Re claim 10, in the electrochemical transistor disclosed by Madden et al. the organic material is a polymer (e.g. column 1, line 34).

Re claim 11, in the electrochemical transistor disclosed by Madden et al. the polymer material is polypyrrole (e.g. column 1, line 24).

Re claim 16, in the electrochemical transistor disclosed by Madden et al. the solidified electrolyte comprises a binder (gel) (e.g. column 1, line 30-32).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 12-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Madden et al., US 6,207,034 B1 in view Cloots et al., US 6,444,400 B1 (previously cited).

Re claim 12, the electrochemical transistor disclosed by Madden et al. includes all the limitations claimed except that the polymer is a polymer or copolymer of a 3,4-dialkoxythiophene. Cloots et al. disclose (e.g. column 1, lines 35-40 and column 3, lines 1-40) that polymer of 3,4-dialkoxythiophene is an equivalent electroconductive polymer known in the

art. Therefore, because these two polymers were art-recognized equivalents at the time the invention was made, one of ordinary skill in the art would have found it obvious to substitute polymer of 3,4-dialkoxythiophene for polypyrrole.

Re claim 13, in the modified transistor of Madden et al. the polymer is poly(3,4-methylenedioxythiophene) (e.g. column 3, lines 1-40).

Re claim 14, the electrochemical transistor disclosed by Madden et al. includes all the limitations claimed except that organic material comprises a polyanion compound. Cloots et al. disclose an electroconductive material suitable for use in electrochemical transistors wherein the organic material comprises a polyanion compound (i.e. column 1, lines 35-49). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device of Madden et al. to include an organic material comprising a polyanion compound disclosed by Cloots et al. in order to obtain a highly conductive material (e.g. column 1, lines 35-49).

Re claim 15, in the modified electrochemical transistor of Madden et al. the said polyanion compound is poly(styrene sulphonic acid) (i.e. column 4, lines 6-7).

5. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Madden et al., US 6,207,034 B1.

The electrochemical transistor device disclosed by Madden et al. includes all the limitations claimed except that the electrochemical transistor device is self-supporting. However, it is well known that solid materials are self-supporting and since all the components of the electrochemical transistor device disclosed by Madden et al. are solid they must be self-

supporting. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made that the transistor device disclosed by Madden et al. is self-supporting since it is well known that solid materials are self-supporting.

6. Claims 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Madden et al., US 6,207,034 B1 in view of Duthaler et al., US 2002/0053320 A1 (previously cited).

Re claim 20, the electrochemical transistor device disclosed by Madden et al. includes all the limitations claimed except that the electrochemical transistor device is arranged on a support. Duthaler et al. disclose a transistor formed from organic materials wherein the transistor disclosed by Duthaler et al. is formed on a substrate (support) (e.g. page 3, paragraph [0049]). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device of Madden et al. to arrange the transistor device on a support as disclosed by Duthaler et al. in order to increase production.

Re claim 21, in the modified electrochemical transistor of Madden et al. the support is polyethylene terephthalate (e.g. page 2, paragraph [0035]).

Allowable Subject Matter

7. Claims 4-6, 9, 17, 18 and 31 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. Claims 22-29 and 32-35 allowed.

Response to Arguments

9. Applicant's arguments, see Amendment B, filed 3/25/2003, with respect to the rejection(s) of claim(s) 1,4-6,8,10,11,16,19-21 and 31 under 35 U.S.C. § 102(e) have been fully considered and are persuasive. According to pages 1 and 2 of the specification, the electrochemical transistor device in addition to having a channel comprising of a conducting polymer, which is also present in an organic field effect transistor, must necessarily comprise an electrolyte that allows the conducting polymer to be switched between an oxidized and reduced state (electrochemical redox reaction). Based on the differences disclosed, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of a newly found reference.

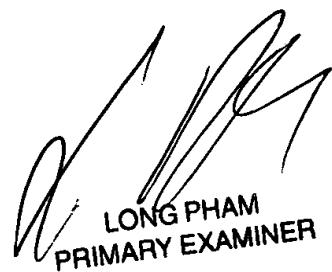
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aneta B. Cieslewicz whose telephone number is (703) 308-7607. The examiner can normally be reached on M-F (8:30 a.m. - 5:00 p.m.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (703) 308-4918. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

ABC
June 9, 2003



LONG PHAM
PRIMARY EXAMINER

A handwritten signature in black ink, appearing to read "L.P.", is positioned above the printed name and title. The printed text "LONG PHAM" is on the first line, and "PRIMARY EXAMINER" is on the second line, both in a black, sans-serif font.